



PREVENT CONTAMINATION WITH AN AUSTRALIAN MADE LINING SYSTEM

ELCOSEAL® GEOSYNTHETIC CLAY LINER

TECHNICAL DATA SHEET

Elcoseal Geosynthetic Clay Liners (GCL) are an easy to install lining material used in landfills and waste containment structures and for liquid containment in effluent ponds and tailings dams. Elcoseal GCLs are also effective liners for dams, ponds, lakes, wetlands, irrigation canals and channels.

- Consists of a layer of naturally occurring powdered sodium bentonite, needle-punched between layers of woven and non-woven geotextiles
- The proven performance of Elcoseal stems from consistently low permeability, proven edge sealing techniques, and the powdered bentonite clay, which allows for instant sealing
- Improved cost benefits with a simple installation process compared to thick compacted clay liners
- Applicable for Waste, Mining and Water sectors



ELCOSEAL - INDEX TECHNICAL DATA

PROPERTY	TEST METHOD	MQC ¹ FREQUENCY	UNITS	GRADE		
				X800	X1000	X2000
GCL Hydraulic Properties						
Hydraulic Conductivity, k	ASTM D5887	40,000 m ²	m/s	≤ 5.0 x 10 ⁻¹¹	≤ 3.0 x 10 ⁻¹¹	≤ 3.0 x 10 ⁻¹¹
Index Flux	ASTM D5887	40,000 m ²	m ³ /m ² /s	≤ 1.0 x 10 ⁻⁰⁸	≤ 1.0 x 10 ⁻⁰⁸	≤ 1.0 x 10 ⁻⁰⁸
Index Flux ² (0.05M CaCl ₂)	ASTM D6766	Annual	m ³ /m ² /s	≤ 1.0 x 10 ⁻⁰⁷	≤ 1.0 x 10 ⁻⁰⁷	≤ 1.0 x 10 ⁻⁰⁷
GCL Components - Mass						
Cover Nonwoven Geotextile Mass per Unit Area	AS 3706.1	10,000 m ²	g/m ²	≥ 225	≥ 225	≥ 225
Bentonite Mass per Unit Area @ 0% Moisture Content	ASTM D5993	2,500 m ²	g/m ²	≥ 3,700	≥ 4,000	≥ 3,700
Carrier / Composite Geotextile Mass per Unit Area	AS 3706.1	70,000 m ²	g/m ²	≥ 100	≥ 100	≥ 325
Geotextile Configuration (Carrier / Cover) ³				W / NW	W / NW	W+NW / NW
GCL - Mass						
GCL Total Mass per Unit Area @ 0% Moisture Content	ASTM D5993	2,500 m ²	g/m ²	≥ 4,025	≥ 4,325	≥ 4,250
GCL - Strength Properties						
Strip Tensile Strength (MD) ⁴	ASTM D6768	10,000 m ²	kN/m	≥ 8	≥ 11	≥ 12
CBR Strength	AS 3706.4	25,000 m ²	N	≥ 1,500	≥ 1,900	≥ 3,000
CBR Elongation	AS 3706.4	25,000 m ²	%	≥ 10	≥ 10	≥ 30
Peel Strength ⁵	ASTM D6496	2,500 m ²	N/m	≥ 360	≥ 360	≥ 500
GCL Durability						
Component Durability	GRI GCL 3	Annual	%	≥ 65	≥ 65	≥ 65

ELCOSEAL - BENTONITE PROPERTIES

PROPERTY	TEST METHOD	UNITS	VALUE
Particle size	N/A	N/A	Powdered
Montmorillonite Content	CSIRO XRD Quantitative Mineralogy Analysis	%	≥ 70
Carbonate Content	CSIRO XRD Quantitative Mineralogy Analysis	%	< 2
Bentonite Form	N/A	N/A	Naturally occurring sodium bentonite
Cation Exchange Capacity	Methylene Blue	meq/100g	≥ 70
Swell Index ⁶	ASTM D5890	mL/2g	≥ 24
Fluid Loss ⁶	ASTM D5891	mL	≤ 18

ELCOSEAL - PERFORMANCE TECHNICAL DATA

PROPERTY	TEST METHOD	MQC ¹ FREQUENCY	UNITS	GRADE		
				X800	X1000	X2000
GCL - Shear Strength Properties						
Hydrated Peak Internal Shear Strength @ 10kPa Normal Stress ⁷	ASTM D6243	Annual	kPa	30	30	35
Hydrated Peak Internal Shear Strength @ 30kPa Normal Stress ⁷	ASTM D6243	Annual	kPa	50	50	60
GCL Longitudinal Edge Treatment						
Bentonite Impregnation - Width ≥ 300 mm			-	√	√	√
Edge Sealing Performance	ASTM STP 1308 (Mod.) ^{8,9,10}	3 Yearly	m/s	≤ 5.0 x 10 ⁻¹¹	≤ 3.0 x 10 ⁻¹¹	≤ 3.0 x 10 ⁻¹¹
GCL Roll Dimensions						
Standard Roll Dimensions (Width x Length)			m	4.7 x 45	4.7 x 45	4.7 x 45
Typical Roll Mass (standard roll length). Note: Longer custom roll lengths are available to suit project requirements.		(Weighed every roll)	kg	1,050	1,125	1,125
GCL Spreader Bar Requirement			-	Heavy-Duty ¹¹	Heavy-Duty ¹¹	Heavy-Duty ¹¹

1. MQC = Manufacturing Quality Control – an ongoing system that monitors and tests materials during manufacture to ensure compliance with certification documents and contract specifications.
2. As per GRI GCL 3.
3. W= Woven, NW= Nonwoven.
4. MD = Roll Machine Direction.
5. High Peel variants are available, please discuss with sales representative.
6. Tested every 50 Tonne of material.
7. Typical Peak Value reported at 10kPa or 30kPa normal stress. [The reported values are not intended to replace site specific internal shear or interface friction testing required for design].
8. Reference - Daniel, D.E. Trautwein, S.J. and Goswami, P.K. 1997. Measurement of Hydraulic Properties of Geosynthetic Clay Liners Using a Flow Box, Testing and Acceptance Criteria for Geosynthetic Clay Liners, ASTM STP 1308, p. 196-207.
9. Modification Reference - Kendall, P.M., Austin, R. A. 2014. Investigation of GCL Overlap Techniques Using a Large Scale Flow Box, 7th International Congress on Environmental Geotechnics, 3B-3, p. 746-753.
10. Long term test over 6 months duration.
11. Heavy-Duty WLL (Working Load Limit) = 1,400kg.

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